Development of a Toxicity Test for Evaluating the Combustion By-Products of Nonmetallic Fuselage Structures During Burnthrough Resistance Testing

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Abstract. This report summarizes the research effort undertaken by the U.S. Federal Aviation Administration to develop a laboratory-scale test method for evaluating the products of combustion inside an intact transport category fuselage during exposure to a simulated external fuel fire. An oil-fired burner, configured in accordance with Title 14Code of Federal Regulations Part 25.856(b) Appendix F, part VII, was used to simulate the fuel fire, and a 4- by 4- by 4-foot steel cube box was used to mount representative test samples. The cube box simulated an intact fuselage and served as an enclosure to collect emitted gases during fire exposure. A sophisticated Fourier Transform Infrared/Total Hydrocarbon gas analysis system was used to continually measure the products of combustion collected within the enclosure. Additional analyzers continuously measured the amount of carbon monoxide, carbon dioxide, and oxygen in the collected stream.